

**ABSTRACT**

The invention describes enhanced scintigraphic imaging agents that can be used to localize infection and inflammation in a mammal. Specifically, the invention relates to radiolabeled, preferably technetium-99m labeled scintigraphic imaging agents that are compositions of a polysulfated glycan or mixture thereof and a compound comprising a polybasic peptide covalently linked to a radiolabel binding moiety. Methods and kits for making such compositions, and methods for using such compositions to image sites of infection and inflammation in a mammalian body are also provided. The enhanced imaging agents exhibit improved binding affinity to the polysulfated glycans, better biodistribution and infection uptake, thus providing improved imaging results.